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INL supercharges computing bandwidth

The U.S. Department of Energy's Idaho National Laboratory has taken significant steps toward giving its scientists and engineers dramatically improved access to computing capabilities outside of the laboratory.

Using managed, OC-48 (Optical Carrier-48) leased services through Qwest Communications International Inc. (NYSE: Q), INL's high-performance computing infrastructure was connected in mid-August to DOE's Energy Sciences Network (ESnet). Lawrence Berkeley National Laboratory operates ESnet for the Department of Energy's Office of Science to support large-scale science collaborations at DOE labs nationwide. While a very small-scale connection had existed in the past, this new connection has hundreds of times the capacity, and better matches INL's envisioned computing needs.

INL's access to "big bandwidth" will enable laboratory scientists and engineers to collaborate with peers at universities, corporations and other DOE labs on computer-based projects requiring large bandwidth applications such as design, simulation, modeling and visualization. With this new capability, it will be practical for researchers to meet via videoconference or to exchange large data files without tying up the Internet access, as was common in the past.

"This sizable increase in bandwidth will allow INL scientists and engineers to improve their modeling and simulation capabilities as well as their collaborative activities, and is a key step toward our vision to become the pre-eminent nuclear research and development laboratory," said Dr. James Lake, Nuclear Programs associate lab director.

Instead of connecting to the Internet using the existing business DS3 (45 megabits per second), the lab's Information Technologies computing system has added a 2.5 gigabits-per-second connection over an OC-48 connection, a significantly higher capacity.

This is a major boost for INL scientists, engineers and those in the DOE research community who will be performing computer-based research, design and development with colleagues around the world. ESnet's architecture will meet the demands, increase reliability, and dramatically boost the demand for wider network bandwidth and network services. The connection was completed in partnership with the DOE Office of Science.

"Qwest is pleased to continue working with the Department of Energy and INL because they are truly breaking new ground with complex data networking," said Diana Gowen, senior vice president, government service division for Qwest. "We look forward to continuing to provide mega-bandwidth services to support their growing needs."

Broadening the bandwidth is necessary for the multiprogram INL to become a major center for national security technology development and demonstration – and to foster academic, industry, government and international collaborations – all part of INL's vision. The bandwidth upgrade – part of the laboratory's consolidation of the former Argonne National Laboratory-West and the Idaho National Engineering and Environmental Laboratory into INL – vaults the lab into the peer class of other prominent DOE national labs, whose researchers have been interacting through larger bandwidth in recent years.

"Our researchers needed this upgrade to interact with their colleagues here and throughout the scientific community at other locations," said Dr. David Miller, INL Physical Sciences Division director and chief proponent for the Center for Advanced Modeling and Simulation (CAMS).

Over time, INL will attain increased use of high-speed bandwidth and world-class capacity by scientists and engineers as they modify work processes, procedures and the way they do business day to day. The lab will grow its internal high-computing and application capability to interact effectively with peers in universities, industry and other DOE labs. Examples of other research programs that will benefit from the larger bandwidth are CAMS, and CAES (Center for Advanced Energy Studies).

"The capacity to interact with the Internet for the grand things we want to accomplish can't be done with a tiny one-half-inch pipeline that existed in the past," said Dr. Leonard Bond, CAES director. "With our new 'aqueduct-sized' connection, the Center for Advanced Energy Studies can collaborate with research universities as INL takes the leadership role in revitalizing nuclear and advanced energy research."

Paul Martinez, IT Communications Infrastructure manager, said the addition of the OC-48 gives scientists, engineers and researchers a dedicated pipe. The additional bandwidth provides dedicated resources to researchers and scientists so the lab can evolve into a world-class institution. This first step, acquiring larger bandwidth, would not have transpired without the Leadership-Management team's support, along with that of the IT staff.

INL is a nuclear energy and multidisciplinary national laboratory dedicated to supporting the U.S. Department of Energy's mission in energy, national security and science. INL is operated for the DOE by Battelle Energy Alliance.

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